

	Search Text	DBs	Time Stamp
18	carborundum and rubber	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:53
19	(carborundum and rubber) and tire	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:53
20	((carborundum and rubber) and tire) and tread	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:01
21	(524/493).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:02
22	(524/492).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:03
23	(524/496).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:04
24	(524/495).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:04
25	(524/430).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:05
26	(524/438).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:06
27	(rubber and (silicon adj carbide)) and tire	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:06
28	("6121346").PN.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:06
29	((("6121346").PN.) and (silicon adj carbide)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:07
30	tacktene near3 (vinyl)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/21 09:17

	Search Text	DBs	Time Stamp
1	tire and tread and ((silicon adj carbide) near10 (BET and (particle adj size)))	USPAT; US_PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/21 09:17
2	tire and ((silicon adj carbide) near10 (BET and (particle adj size)))	USPAT; US_PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:26
3	((silicon adj carbide) near10 (BET and (particle adj size)))	USPAT; US_PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:27
4	rubber and (silicon adj carbide)	USPAT; US_PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:27
5	silicon carbide and BET and particle size	USPAT; US_PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:28
6	silicon carbide and BET and (particle adj size)	USPAT; US_PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:28
7	(silicon adj carbide) and BET and (particle adj size)	USPAT; US_PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:28
8	(silicon adj carbide) same (BET and (particle adj size))	USPAT; US_PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:33
9	wyrozebski and (silicon adj carbide)	USPAT; US_PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:34
10	wyrozebski	USPAT; US_PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:34
11	((silicon adj carbide) same (BET and (particle adj size))) and rubber	USPAT; US_PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:34
12	wyrozebski and (silicon adj carbide)	USPAT; US_PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:36
13	rubber and (silicon adj carbide)	USPAT; US_PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:36
14	(rubber and (silicon adj carbide)) and tire	USPAT; US_PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:36
15	((rubber and (silicon adj carbide)) and tire) and tread	USPAT; US_PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:44
16	carborundum	USPAT; US_PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:53
17	SiC adj PT8026J	USPAT; US_PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:53

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INTRODUCTION TO NANOTECHNOLOGY PRINT THIS PAGE

The nanotechnology industry can be broadly defined as companies focusing on emerging technology to develop and manufacture precision products at the atomic, molecular or macromolecular levels (e.g., approximately 1 - 100 nanometers in size, with each nanometer being equal to one billionth of a meter). Current research and development and commercialization efforts range from providing a fundamental understanding of the phenomena materials exhibit at the nanoscale range, to creating and using structures, devices and systems that have novel properties and functions as a result of their sub-100 nanometer size. [Click here](#) to see an animated demonstration of the size of nanoscale materials.

Nanotechnology involves integrating and is inviting cooperative multidisciplinary work. Major efforts include nano-electronics, which aims to develop active circuits and chips from molecular building blocks, nano-biotechnology, which aims to develop medicines, markers, and devices from molecular level engineering and nano-materials, which aims to develop precision engineered nanoscale materials for a wide range of industries.

NanoProducts Corporation focuses on materials nanotechnology. We work on developing and applying nanoscale building blocks for performance-enhanced products. In other words, our goal is to significantly enhance the productivity and profitability by delivering nano-engineered forms of materials used in products and processes.

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Duradene A.O.	Bound Styrene	Block Styrene	Vinyl	Tg	Base ML/4	OE ML/4	Oil PHR	Oil Type	Specific Gravity
706	N.S.	23.5	<2	11 62	55	--	0	--	0.93
707*	N.S.	23.5	<1	11 62	45	--	0	--	0.93
711	S.S.	18.0	<1	11 70	70	--	0	--	0.93
715	S.S.	23.5	<1	46 39	60	--	0	--	0.94
750	S.	18.0	<1	11 70	103	45	37.5	ARO.	0.94
751	S.	25.0	<1	11 60	110	45	37.5	ARO.	0.95
753	S.	33.0	<1	13 50	145	74	20.0	ARO.	0.95
756	S.	33.5	<1	30 39	125	57	37.5	ARO.	0.95
758	N.S.	25.0	<1	11 60	103	45	37.5	NAP.	0.94
762	S.	40.0	<1	36 27	140	63	37.5	ARO.	0.96

*Not currently in production

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Taktene® (Tire Products)**Butadiene rubber(BR)****Properties:**

- Provided that the compounds are formulated and processed correctly, the vulcanizates have good resistance to aging, reversion, abrasion and flex cracking, good low temperature flexibility and high resilience.

Applications:

- Tires, conveyor belting, caterpillar tread blocks, footwear soles, V-belts; blended with NR for goods having thick sections and needing high resistance to reversion, e.g. buffers, roll covers needing high abrasion resistance; seals, profiles and other goods, particularly those produced by injection molding

Food contact:

Product	Catalyst	Cis-1,4 content (%)	Oil content (wt %)	Mooney viscosity (ML (1+4) 100°C)	Remarks
▼ Masterbatch with 77 pbw N 234 black					
<u>Taktene® 1359</u>	cobalt	> 96	23 +/- 2	59 +/- 7*	*Different measuring method: MS (1+4) 100°C
▼ Standard grades					
<u>Taktene® 1203</u>	cobalt	> 96	-	43 +/- 5	
<u>Taktene® 1203-G1</u>	cobalt	> 96	-	43 +/- 5	
<u>Taktene® 1220</u>	cobalt	> 96	-	41 +/- 5	
<u>Taktene® 220</u>	cobalt	> 96	-	40 +/- 5	
<u>Taktene® 221</u>	cobalt	> 96	-	53 +/- 5	
<u>Taktene® 4510</u>	lithium	38	-	45 +/- 5	
<u>Taktene® 5510</u>	lithium	38	-	53 +/- 6	



Product Specification

Fibers, Additives and
Rubber Division

Rubber

TAKTENE 1203*

Product Description

A highly linear, low Mooney viscosity, non-staining, solution polymerized, high cis-1,4-polybutadiene rubber.

Raw Polymer Properties

Property	Range	Test Method
Mooney viscosity ML 1+4(100°C)	43 ± 5	ASTM D 1646
Volatile matter (wt %)	0.7 max.	ASTM D 5668

Cure ⁽¹⁾⁽²⁾ Characteristics

Property	Range	Test Method
Minimum torque ML (dN.m) (lbf.in)	3.7 ± 1.0 3.3 ± 0.9	ASTM D 5289 ASTM D 5289
Maximum torque MH (dN.m) (lbf.in)	20.4 ± 3.0 18.1 ± 2.7	ASTM D 5289 ASTM D 5289
t _{S1} (minutes)	2.3 ± 1.2	ASTM D 5289
t ₅₀ (minutes)	7.8 ± 1.3	ASTM D 5289
t ₉₀ (minutes)	11.7 ± 2.1	ASTM D 5289

Other Product Features

Property	Typical Value
Specific gravity	0.91
Stabilizer type	Non-staining

(1) MDR Rheometer at 160°C, ±0.5 degree arc, 30 minutes running time, no preheat

(2) Cure characteristics determined on the following MIM mixed compound:

TAKTENE 1203	100	(parts by mass)
Zinc oxide	3	
Stearic acid	2	
IRB #7 black (N330)	60	
Naphthenic oil	15	
TBBS	0.9	
Sulfur	1.5	

* This specification refers to product manufactured by Bayer Inc., Sarnia, Ontario, Canada.

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